

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 09765-092WO1	<b>FOR FURTHER ACTION</b> sec Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US 08/50186	International filing date ( <i>day/month/year</i> ) 04 January 2008 (04.01.2008)	(Earliest) Priority Date ( <i>day/month/year</i> ) 05 January 2007 (05.01.2007)
Applicant ITA SOFTWARE, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.  
☐ a translation of the international application into \_\_\_\_\_ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II).

3. ☐ Unity of invention is lacking (see Box No. III).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.  
☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.  
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1  
☐ as suggested by the applicant.  
☐ as selected by this Authority, because the applicant failed to suggest a figure.  
☒ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/50186

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - G01C 21/34 (2008.04) USPC - 705/6 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC(8): G01C 21/34 (2008.04) USPC: 705/6 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 705/1, 5, 6, 7, 500; 707/1, 3, 6, 10 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) USPTO WEST (PGPB, USPT, EPAB, JPAB); GOOGLE Search Terms Used: travel, price, fare, graph, solution, optimize, discard, remove, delete, update, seat, database, available, solid, open, free, flight, airplane, flight, trip, constraint, parameter etc.		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/0249682 A1 (DEMARCKEN et al.) 09 December 2004 (09.12.2004), entire document, especially para [0029]-[0030], [0038]-[0042], [0073]-[0077]	1-8, 17-23, and 32-39
Y	US 6,609,098 B1 (DEMARCKEN et al.) 19 August 2003 (19.08.2003), entire document, especially col 4, ln 46-64	9-16, 24-31, and 40-47
A	US 2005/0021424 A1 (LIEBENOW) 27 January 2005 (27.01.2005)	1-47
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* Special categories of cited documents. "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 15 October 2008 (15.10.2008)		Date of mailing of the international search report <b>03 NOV 2008</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
DENIS G. MALONEY  
FISH & RICHARDSON P.C.  
P.O. BOX 1022  
MINNEAPOLIS, MA 55440-1022

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

03 NOV 2008

Applicant's or agent's file reference  
09765-092WO1

## FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US 08/05186

International filing date (day/month/year)

04 January 2008 (04.01.2008)

Priority date (day/month/year)

05 January 2007 (05.01.2007)

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - G01C 21/34 (2008.04)

USPC - 705/6

Applicant ITA SOFTWARE, INC.

## 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US  
Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450  
Facsimile No. 571-273-3201

Date of completion of this opinion

15 October 2008 (15.10.2008)

Authorized officer:

Leo W. Young

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 08/50186

**Box No. 1 Basis of this opinion**

1. With regard to the language, this opinion has been established on the basis of:
- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into \_\_\_\_\_ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:
- a. type of material
- ☐ a sequence listing
- ☐ table(s) related to the sequence listing
- b. format of material
- ☐ on paper
- ☐ in electronic form
- c. time of filing/furnishing
- ☐ contained in the international application as filed
- ☐ filed together with the international application in electronic form
- ☐ furnished subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	9-16, 24-31, and 40-47	YES
	Claims	1-8, 17-23, and 32-39	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-47	NO
Industrial applicability (IA)	Claims	1-47	YES
	Claims	None	NO

## 2. Citations and explanations:

Claims 1-8, 17-23, and 32-39 lack novelty under PCT Article 33(2) as being anticipated by US 2004/0249682 A1 to DeMarcken et al. (hereinafter 'DeMarcken 682').

As per claims 1, 17 and 32, DeMarcken 682 discloses a method (and corresponding system and computer product) for travel planning, the method comprising: querying a travel planning system with travel queries specifying parameters of trips (see para [0005]-[0006]); receiving answers to the queries from the travel planning system, the answers including itinerary and fare information according to the parameters (see para [0007] and [0029]); predicting seat availability of flights in the itinerary information in the answers (see para [0073]-[0077], [0115]); and storing in a cache database only those answers for which seats are predicted to be available (see para [0029]).

As per claims 2, 18, and 33, DeMarcken 682 further discloses receiving from a system, a query specifying travel parameters of a trip of interest for a user (see para [0029]).

As per claims 3, 19, and 34, DeMarcken 682 further discloses sending to the system, from the cache database, cached results matching at least one of the travel parameters (see para [0029]-[0030]).

As per claims 4, 20, and 35, DeMarcken 682 further discloses continually querying the travel planning system with travel queries and storing, in the cache database, cached results generated from the travel planning system (fresh, see para [0030]).

As per claims 5 and 36, DeMarcken 682 further discloses posing a first subset of the travel queries at a higher frequency than a second subset of the travel queries (see para [0038]-[0039], [0084]).

As per claims 6 and 37, DeMarcken 682 further discloses wherein the first subset includes one or more of: markets of high popularity and dates near to a present date (see para [0038]).

As per claims 7, 22 and 38, DeMarcken 682 further discloses generating pricing-solutions for the cached results (see para [0070]).

As per claims 8, 23, and 39, DeMarcken 682 further discloses pre-populating the cache database with results that are known in advance to be valid at a later time (see para [0042]-[0043], [0076]-[0077]).

As per claim 21, DeMarcken 682 further discloses wherein the caller is further configured to: pose a first subset of the travel queries at a higher frequency than a second subset of the travel queries, wherein the first subset includes one or more of: markets of high popularity and dates near to a present date (see para [0038]-[0039], [0084]).

Claims 9-16, 24-31, and 40-47 lack inventive step under PCT Article 33(3) as being obvious over DeMarcken 682 in view of US 6,609,098 B1 to DeMarcken et al. (hereinafter 'DeMarcken 098').

As per claims 9, 24, and 40, DeMarcken 682 discloses a method, as described above, for travel planning but does not specifically disclose discarding a subset of the answers corresponding to flights for which no seats are predicted to be available. DeMarcken 098, however, discloses discarding a subset of the answers corresponding to flights for which no seats are predicted to be available (col 4, ln 53-64). It would have been obvious to one of ordinary skill in the art to combine the teachings of DeMarcken 682 with DeMarcken 098 because discarding data that is of no use, such as unavailable seats, will reduce and therefore optimize the speed and efficiency of the database, thus increasing the overall appeal of DeMarcken 682.

(See Supplemental Box)

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## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box No. V — Reasoned Statement

2. Citations and Explanations:

As per claims 10, 25, and 41, DeMarcken 682 discloses a method (and corresponding system and computer product) for travel planning comprising: storing in a cache database, a pricing graph generated from a travel planning system, the pricing graph including nodes corresponding to flights and fares that can produce travel itineraries that satisfy parameters of travel planning queries (see para [0002], [0029]), retrieving seat availability information for the travel itineraries (see para [0073]) but does not specifically disclose disabling nodes. DeMarcken 098, however, discloses disabling nodes corresponding to a subset of the travel itineraries for which no seats are available (col 4, in 53-64); and disabling nodes corresponding to a subset of the fares for which no travel itineraries are available (col 4, in 46-52). It would have been obvious to one of ordinary skill in the art to combine the teachings of DeMarcken 682 with DeMarcken 098 because discarding data that is of no use, such as unavailable seats, will reduce and therefore optimize the speed and efficiency of the database, thus increasing the overall appeal of DeMarcken 682.

As per claims 11, 26 and 42, DeMarcken 098 further discloses enumerating pricing solutions from remaining nodes of the pricing graph (abstract).

As per claims 12, 27 and 43, DeMarcken 682 further discloses wherein disabling nodes corresponding to a subset of the travel itineraries comprises checking seat availability of flights corresponding to the travel itineraries only after receiving a request from a user for information pertaining to pricing solutions associated with the travel itineraries (see para [0029]).

As per claims 13, 28, and 44, DeMarcken 682 further discloses: generating new pricing solutions in response to detecting one or more of: a fare, flight, and rule update associated with the travel itineraries (see para [0078]).

As per claims 14, 29, and 45, DeMarcken 098 further discloses wherein enumerating pricing solutions comprises applying constraints and value functions specified in rules associated with the remaining nodes (Fig 10 and col 41, in 26-41).

As per claims 15, 30, and 46, DeMarcken 682 further discloses wherein the constraints comprises one or more of: routing restrictions and carrier restrictions (see para [0103]).

As per claims 16, 31, and 47, DeMarcken 682 further discloses wherein enumerating further comprises filtering pricing solutions having combinations of fares and flights for which no seats are available (col 4, in 46-64).

Claims 1-47 have industrial applicability as defined by PCT Article 33(4) because the subject matter claimed can be made or used in industry.